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Abstract

The paper studies the effects of FDI inflows on the Pakistani economy over the period 1961-2005 using the Johansen co-integration technique and the Vector Error Correction Model. We determine that FDI does have a positive effect on growth rate and other economic variables, particularly in the short term. Foreign investment is found to have a less important role than domestic investment. However, FDI impacts negatively on human capital. We can thus say that FDI has neither been an absolute boon nor a downright bane for Pakistan.

Résumé

On étudie l'impacte des IDE sur l'économie Pakistanaise pendant la période 1961-2005 en utilisant la technique de cointégration de Johansen et le VECM. On trouve que les IDE ont un effet positif sur l'économie particulièrement à court terme. Les investissements étrangers ont un rôle moins important que celui des investissements domestiques. En revanche, l'impacte sur le capital humain est négatif. Par conséquent, on peut conclure que les IDE ont été ni bénéfiques, ni néfastes.

JEL Classification : F21

Keywords: Foreign direct investment; Economic growth; Pakistan; Human capital; Domestic investment.

1. Introduction

With globalization going from strength to strength and with international financial flows growing substantially, foreign capital flows have assumed an important role in the world economy. The share of net foreign direct

investments has quintupled through the 1980s and 90s. Although North-South foreign direct investment (henceforth FDI) existed in earlier phases of globalization as well, capital exchanges remained limited mainly between the developed countries for much of the twentieth century. A change from the past has been the increase in FDI flows towards the developing countries in the last few decades. Today, FDI typically accounts for more than 60 percent of private capital flows to the developing world (World Bank, 2006). This, in turn, has given them more liberty to pursue indigenous economic policies. Consumption and savings have picked up, and FDIs have helped countries export more. FDIs have also proved to be more reliable than other forms of foreign capital during financial crises. While portfolio investment and debts dried out during the East Asian crisis of 1997 and the Mexican crisis (1994-95), FDIs held up (Lipsey 2001).

Pakistan, a developing country, has not remained untouched by the ebs and flows of this global trend, and has seen its FDI inflows multiply in the last few years. What changes have these inflows brought to the national economy? Have they led to growth in the GDP? or has their effect been to increase short-term consumption? In other words, have the FDIs been beneficial for the country in the long run, or have the effects been limited to the short term? This article aims at finding answers to these questions.

The article is composed of five sections. Section two reviews the literature on the role of FDI in economic growth. Section three describes the model and choice of variables accompanied by econometric analysis. The subsequent section discusses the empirical results and their possible economic and sociopolitical explanations. Section five concludes the study. References and appendices follow.

2. Literature review

2.1. FDI- theory and empirics

Foreign direct investment is defined as the investment made to acquire lasting interest in enterprises operating in another economy. The parent firm must own at least 10 percent of the ordinary shares or voting power of the incorporated firm. Ownership of a smaller amount of shares is called portfolio investment. FDI does not simply consist of financial flows but includes know-how, skills and technology, and can add to the capital, both physical and human, through training, skill acquisition and technology diffusion, as well as introduction of better management techniques.

FDI can be classified in many ways. It can be Greenfield i.e investment in a manufacturing, office, or other physical company-related structure in an areawhere no previous facilities exist, as opposed to Brownfield which comprise licencing, mergers and acquisitions etc. FDI is often categorized as market seeking or horizontal (meant to enter and expand in the host economy) and efficiency seeking or vertical (intended to improve the competitiveness of the firm through increased access to physical or human capital resources). FDI in developing countries have traditionally concentrated in market and resource seeking activities, while efficiency-seeking FDI is of a more recent nature in these host countries (Dunning 1999).

The theoretical study of the FDI goes as far back as Adam Smith, John Stuart Mill and Karl Marx. Since those early days the theory of FDIs has evolved substantially. Macroeconomic theories of FDI can be classified into three groups: Neoclassical growth theories, Dependency school theories and Endogenous growth theories.

Neoclassical growth theories began to emerge in the 1950s and 1960s following the Harrod Domar Growth Model (1939, 1946). The Solow and Swan model and the Ramsey-Cass-Koopmans model made important contributions in this regard. According to these theories, physical capital and homogeneous labour are the only factors of production, and human capital and technological change are considered exogenous. Incomes of countries with same preferences and similar technologies converge over time leading to a long run steady state. As capital is thought to flow from regions with lower returns to those with higher return potential, FDI is thought to help poor countries grow faster and catch up with more advanced countries.

The theories of the dependency school assert that foreign capital is harmful for developing countries in the long run. First World countries grew rich by exploiting the natural and human resources of Third World countries, while third World countries were inadequately paid for their resources and this unequal exchange left them in perpetual poverty. Multinational corporations based in the rich countries of the Core, according to these theories, cause the development of underdevelopment in the countries of the Periphery.

As opposed to traditional neoclassical growth theory, the Endogenous growth theories emphasize the role of human capital as an important endogenous factor in economic growth (Romer, 1986, Lucas, 1988). Lucas–Romer endogenous growth model suggests that endogenously accumulated human capital has a direct impact on the productivity of labour and, as a result, human capital becomes specific to the individual, leaving innovation in the stock of knowledge as an exogenous factor. It is an important source of long-term growth, either because it is a direct input into research or because of its positive externalities. Policies promoting investment in human capital can thus stimulate long term economic growth.

FDIs are a major way of transferring the technical know-how and technology. They can have a long-run effect on the economy through technological spillovers and positive externalities.

Among empirical works, Xiaoying and Xiaming (2005) find a significant and positive connection between FDIs and growth both in developing and developed countries. Bengoa and Sánchez-Robles (2003) come up with a long-run positive relationship between FDI and growth for Latin American countries over the period 1970-1999. Basu and Guariglia (2007) also find a similar relationship for 119 developing countries for the same time period. However they suggest this growth is at the cost of growing inequality and a decreasing share of agriculture in the GDP. Empirical studies by Borensztein et al. (1998), Gruben and McLeod (1998), and Basu, Chakraborty and Reagle (2003) for various developing and developed countries also reach results supporting the positive effect hypothesis. Basu et al. show that FDIs have a stronger positive impact on growth in more open economies.

However, many studies show less beneficial effects of FDIs. Dixon and Boswell (1996) find that greater levels of foreign capital penetration led to slower economic growth. A one percent increase in ratio of foreign capital to total capital reduced growth by 0.07 percent, while a one percent increase in the ratio of foreign direct investment to GDP slowd growth by 0.02 to 0.03 percent. Herzer et al. (2006) determine that there does not seem to be a generally positive impact of FDIs on economic growth in the developing countries. Sarkar (2007) show that only

for ten of the fifty one less developed countries studied, it it can be clearly said that FDI has a long-term positive relationship with the growth of per capita income. There are four clear cases of negative relationship, while in majority of countries no long-term relationship exists between FDI and growth whatsoever irrespective of their openness to trade.

Why do empirical studies give such a blurred picture? The reason can be found in the variation of economic and sociopolitical conditions of the countries studied, the quality of data available, and difference in econometric techniques used in those studies. The effects of FDI to economic growth depend on country-specific factors such as the level of per capita income, trade openness, technological conditions and qualified labor force in the host country. Most studies find FDIs to enhance economic growth in developed countries but not in developing countries. Another reason can be that the theory equates FDIs with technological spillovers, while in many cases, no technological transfer takes place.

2.2. FDI and Pakistan

Even though the country has seen periods of high growth, Pakistan's saving rate has historically remained insufficient staying below twenty percent. Bank deposit rates have often been negative in real terms. In order to promote growth, the country has to rely on foreign capital inflows. Foreign aid and worker remittances were the principal sources of foreign capital till the 1980s. In the 1960s and 1970s, Pakistan, just like other many developing countries, put strong emphasis on import substitution industrialization (ISI) and self-reliance, hence FDIs were not actively sought after. Pakistan relied mainly on foreign assistance to overcome its revenue deficits and promote domestic investment. Private foreign investment in that period remained negligible. In order to reduce the growing debt burdon and revitalize the stagnant state-controlled industrial and service sector, Pakistan started the privatization of state corporations in the 1980s. For this purpose, economic reforms were launched and seeking foreign investments became an important policy objective. Starting from the early 1990s, policy and regulatory measures were taken for the liberalisation of trade and investment regime by providing various trade and fiscal incentives to foreign investors through tax concessions, credit facilities, tariff reduction and easing foreign exchange controls (Khan 1997). Restrictions on capital inflows and outflows were gradually lifted. Foreign investors were allowed to hold 100 percent of the equity of industrial project on repatriable basis. In 1994, full convertibility of the Pak-rupee was established on current international transactions. The Government enacted an extensive set of investment incentives including tax holidays for projects in rural and underdeveloped areas (Zaidi 2005).

Today, FDI is not subject to any taxes in addition to those levied on domestic investment. The country has also updated intellectual property laws to bring them in compliance with the Agreement on Trade Related Intellectual Property Rights (TRIPS) of the WTO. Average manufacturing tariffs have fallen from 20.9 per cent in 2000-02 to 15 per cent in 2007-08, and peak ad valorem rates have fallen from 250 per cent in the 80s to a maximum of 90 per cent.

Table1 Inward FDI Performance Index Rankings, 1990-2005

Countries	1990	2000	2004	2005
Bangladesh	109	110	119	116
Bhutan	–	–	–	–
India	101	119	112	119
Maldives	–	–	–	–
Nepal	100	131	136	135
Pakistan	78	118	109	102
Sri Lanka	72	108	96	106

Source: UNCTAD, World Investment Report 2006

These reforms have made Pakistan an attractive potential destination for foreign investment. According to the 2008 edition on the 'ease of doing business' by International Finance Corporation, an arm of the World Bank, Pakistan is ranked 76 among the World's 178 economies. In comparison, neighbouring India sits at the 120th position. Pakistan attracted over $5 billion of FDI in the 2006-07 fiscal year, over twenty times the figure of $ 216.2 million in 1990. FDIs now form a larger part of foreign capital flows than international development assistance. Major investing countries include the U.S, the United Arab Emirates, China, Japan and the European Union. Banking and finance, telecommunications, oil and gas, and retail sectors have attracted most of the recent foreign direct investment inflows.

Despite this impressive albeit recent rise, Pakistan's FDI inflows remain trivial compared to other developing countries. Net private-capital flows to developing countries reached a record $1.03 trillion in 2007 and represent 7.5 per cent of developing countries' GDP. In contrast, as a share of Pakistan's GDP, foreign investment inflows constitute less than 4 percent. The estimated stock of direct foreign investments at home is a mere $20.01 billion (2007). 'The reasons for the low level of FDI inflows include the lack of political stability, slow bureaucratic process, inadequate infrastructure facilities, macroeconomic imbalances, inconsistent economic policies of successive governments, delays in the privatisation of state-owned enterprises, past disputes between foreign investors and the government, piracy of intellectual property, and arbitrary and non-transparent applications of government regulations' (Khan 2007).

In the past ten years, some studies have come out discussing the role of foreign investments in the Pakistani economy. Siddiqui and Kemal (2006) conclude that foreign capital inflow leads to an inefficient use of resources in Pakistan in the presence of trade restrictions and benefit the export sector with trade liberalisation. Foreign capital increases the wage gap in the presence of trade restrictions and reduces it along with trade liberalisation. They also find that short-run dynamics of inward FDI in Pakistan are influenced by the previous development of FDI influx by means of the agglomeration effect. Similarly, Akmal et al. (2007) analyse time series data from 1973 to 2003 and find that FDIs and trade openness help reduce poverty in Pakistan in the long-run. Zeshan Atique, Mohsin Hasnain Ahmad and Usman Azhar (2004) find support for the Bhagwati hypothsis. They determine that the growth impact of FDI tends to be greater under an export promotion trade regime compared to an import-substitution regime. Aqeel and Nishat (2005) show that the short run dynamics of inward FDI in

Pakistan are influenced by the previous development of FDI influx by means of the clustering effect and find a symbiotic relationship between FDI and the exchange rate.

A study of the time period 1973-2005 by Khan and Khan (2007) provides evidence of negative long run impacts of external debt, FDI, and real interest rate on private investment.

Shahbaz et al. (2008) explore the impact of capital account openness on inflationary pressures in Pakistan. Their study suggest that capital account openness is regressive over a long time span. Khan (2007) suggests that Pakistan must reach a minimum financial sector development threshold in order to fully capitalize on the FDI inflows.

3. Empirical Analysis

3.1. The model and description of variables

The economic model used in this study is the endogenous growth model with FDIs being the catalyst for technology advancement employed by Borensztein et al., 1998.

We employ the following equation:

$$GDP\_growthrate = \alpha_0 + \alpha_1 FDI + \alpha_2 FDI \times H + \alpha_3 H + \alpha_4 Y_{T-1} + \alpha_5 A + \varepsilon$$

Where

A is a vector comprising of a number of control and policy variables used as determinants of growth. The variables used in this study include domestic investment, a proxy for financial development, an indicator of trade openness, government expenditure, and inflation as measured by the consumer price index (CPI).

The left hand side of the equation consists of the variable for real growth rate. Given that we intend to analyse the time series data of only one country namely Pakistan, therefore we consider it better to use real growth rate instead of per capita growth rate. The variable FDI is measured as a ratio to GDP, and is conceptually analogous to the fraction of goods produced by foreign firms in the Borensztein model, while he initialGDP variable Y(t-1) captures the role of the 'catch-up' effect.

Measuring the human capital precisely has been a problem and several proxy variables have instead been used. These include adult literacy, secondary school enrolment ratio, adult population with secondary education etc. In this study, we employ the series for human capital stock constructed by Abbas and Foreman-Peck (2007) using benchmark figures based on Barro and Lee (2000). An interactive term of FDI and human capital has also been included. This variable measures the technology spillover flowing from foreign investment to the human capital. For the economy's openness to international trade, the total volume of trade as a percentage of GDP is used here instead of the exports to GDP ratio. Using only exports may generate non significant results because this measure captures in part the adverse effects of import-substitution strategies and a reliance on the export of primary

goods.

Table 2. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
gdp_growth~e	45	5.471111	2.141221	1.2	9.8
fdi_gdp	45	.4804444	.4126905	.01	1.74
h	45	5.082306	2.66911	1.017578	8.433716
fdi_h_gdp	45	3.27378	3.638971	.0123934	14.44201
dominv	45	.1609516	.0176817	.1144011	.192377
lnyt	45	10.30895	.7028779	9.051345	11.36327
financial_~v	45	.2339535	.0400285	.0993882	.2978621
trade_open	45	20.45499	7.320059	8.616323	39.20755
govt_exp_gdp	45	.1102754	.0204347	.0774734	.1680541
cpi	45	7.815556	5.740366	-.6	30

A variable representing the deepening of financial sector is included in the equation as a channel through which FDI interacts with economic growth.

Bank credit to private sector is argued to be a better measure of financial development and is therefore used in this study. It measures the extent of efficient resource allocation in the economy .CPI, a measure of inflation acts as a proxy for the level of economic stability, considering that one of the classic symptoms of loss of fiscal or monetary control is unbridled inflation.

We study the Pakistani economy for the time period 1961-2005. The data used in the study has been taken from the International Monetary Fund IFS database (2006), the Handbook of Statistics on Pakistani economy by the State Bank of Pakistan (2005 edition) as well as the CHELEM online database. Abbas and Foreman-Peck kindly provided the series generated for human capital in Pakistan that they used in their article.

Human Capital and Economic Growth: Pakistan, 1960-2003 (Cardiff Economics Working Papers 2007). The data for GDP was made linear by the use of logarithm. The data is in constant 2000 US dollars.

3.2. Econometric tests

The procedure involves three steps. We begin by testing the existence of unit roots.

Economic time series are often non-stationary in their level form because they grow over time and so do not have a fixed mean. Running ordinary least square estimation of non-stationary variables could give spurious results characterized by high R-square and significant t-statistics for the estimated coefficients as well as low Durbin-Watson statistic due to a high degree of autocorrelation in estimated residuals. They can be rendered stationary

by differencing it once or more. A non-stationary series differenced d times to become stationary is called integrated of order d. For this purpose, we use Augmented Dickey Fuller and the Phillips Perron (PP) test. The null hypothesis assumes nonstationarity (that is the existence of unit root), the rejection of which requires a negative and significant test statistic. Where inclusion of a trend or drift is not supported by the data, only a constant term is used.

We find that the variables FDI, GDP_growth_rate, Govt_exp, Fin_dev, Dom_Inv and CPI are stationary, while H, FDI*H, lnY(t-1) and Trade_open are found to be non-stationary. All the non-stationary variables become sationary after the first difference, so of the degree i1.

Secondly, time series have to be examined for cointegration. Cointegration analysis helps to identify long-run economic relationships between the variables and to avoid the risk of spurious regression. A long-term relationship means that the non-stationary variables are cointegrated if they move together and converge to equilibrium over time. The variables may drift away from the equilibrium for a while, economic forces however act so as to restore equilibrium. Subsequently, they tend to move together in the long run irrespective of short run dynamics. Thus, even if relevant time series themselves are non-stationary, a linear combination of them may be stationary; this combination is called the cointegration equation and includes the cointegration vector.

We use the maximum likelihood method (a full parametric correction) proposed by Johansen (1988). In this method, the unit roots are explicitly incorporated in the specification. It also takes into account short-run dynamics in estimating the cointegrating vector, and additionally provides for testing for the existence of more than one cointegrating vector. This approach can be applied to a set of variables containing a mixture of I(0) and I(1). To choose the optimal lag order, we use the Akaike AIC), Schwartz-Bayesian SBIC) and Hannan-Quinn (HQIC) information criterion. Given the sample size, we consider a maximum lag length of five. The optimal lag length is found to be two for this model, suggesting that the process is an AR(2).

Next, the rank of the cointegration vector is determined. Given the large number of variables in our equation, the Johansen test for co-integration gives a rank order of four at five percent significance level, hence the possibility of four relationships. The fact that the variables in our model are cointegrated indicates the need for an error correction model mechanism (ECM) representation in order to investigate the short run dynamics.The model reintroduces the information lost in the differencing process, thereby allowing for long-run equilibrium as well as short-run dynamics. The VECM model is posited to be a force returning the integrated variables to their long-run relation when they deviate from it and thus the longer the deviation, the greater would be the force tending to correct the deviation.

3.3. Results

Growth_rate = 0.1209 Trade-open - 20.45 Fin_dev - 65.811 Dom-inv + 25.853 Govt_exp

and

FDI = 0.01 Trade_open - 0.12 FDI*H -2.4 Fin_dev - 4.21 Dom-inv + 3.87 Govt_exp

while the VECM equations include:

D_G = 10.64 FDI -1.016 FDI*H

D_CPI = 19.48 FDI -2.417 FDI*H -147.36 govt-exp

D_Fin-dev = -0.1012 FDI -0.040 H + 0.013 FDI*H

D_trade-open = 7.909 FDI + 3.191 H + 0.4638 trade-open

The model shows that FDIs influence the economic growth in a strongly positive way, however they cause inflationary pressures in the short-run. Moreover foreign investments in the short term have grown regardless of the other variables included in the model. Human capital appears to have no significant impact on FDI, both in the short and the long-run.

FDI seems to have no significant relationship with domestic investment in the short-term, which may indicate that domestic investment decisions are made independantly of foreign investment, and probably do not follow the same motive.

To show the impact of different variables over one another graphically, and demonstrate the long-run convergence of the series, we use Impulse Response Function (IRF) and Cumulative Impulse Response Function (CIRF). These graphs investigate the time path of the effects of shocks of independent variables, and determine how each actor responds over time to the first shocks on other variables. The graphs show that a shock to foreign investment influences the growth rate and the financial sector positively, while there is a negative impact over the growth of human capital. A positive shock on FDI does not seem to touch the domestic investment, and nor does the government spending.

Fig. 1: Cumulative Impulse Response Function for model 1

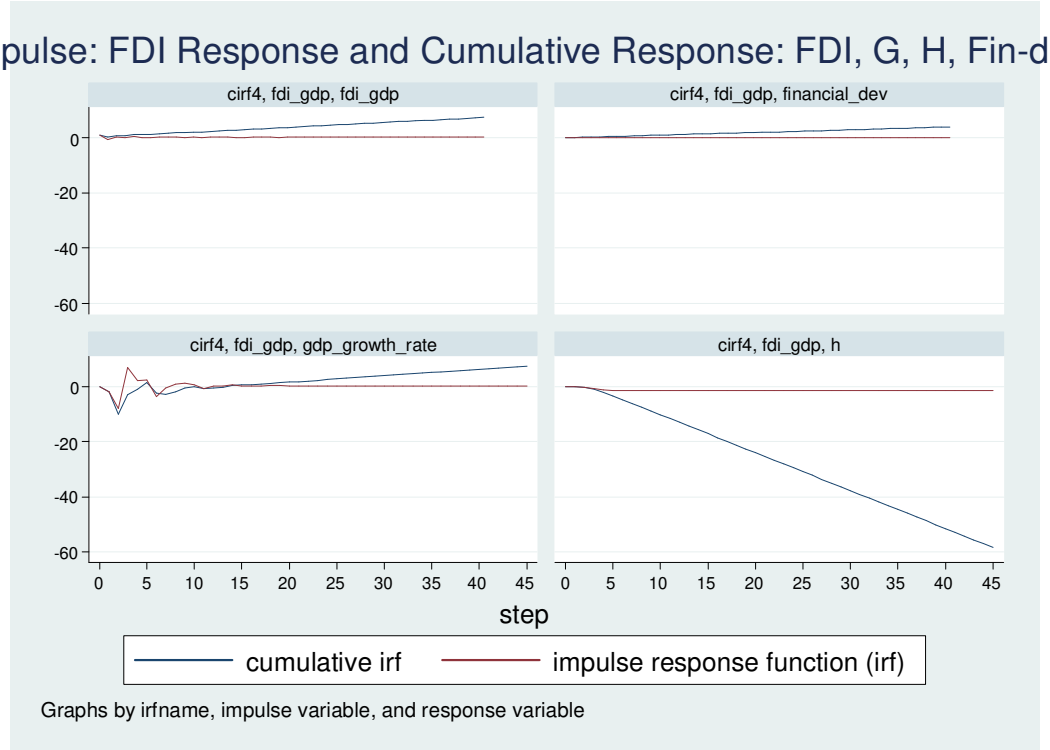
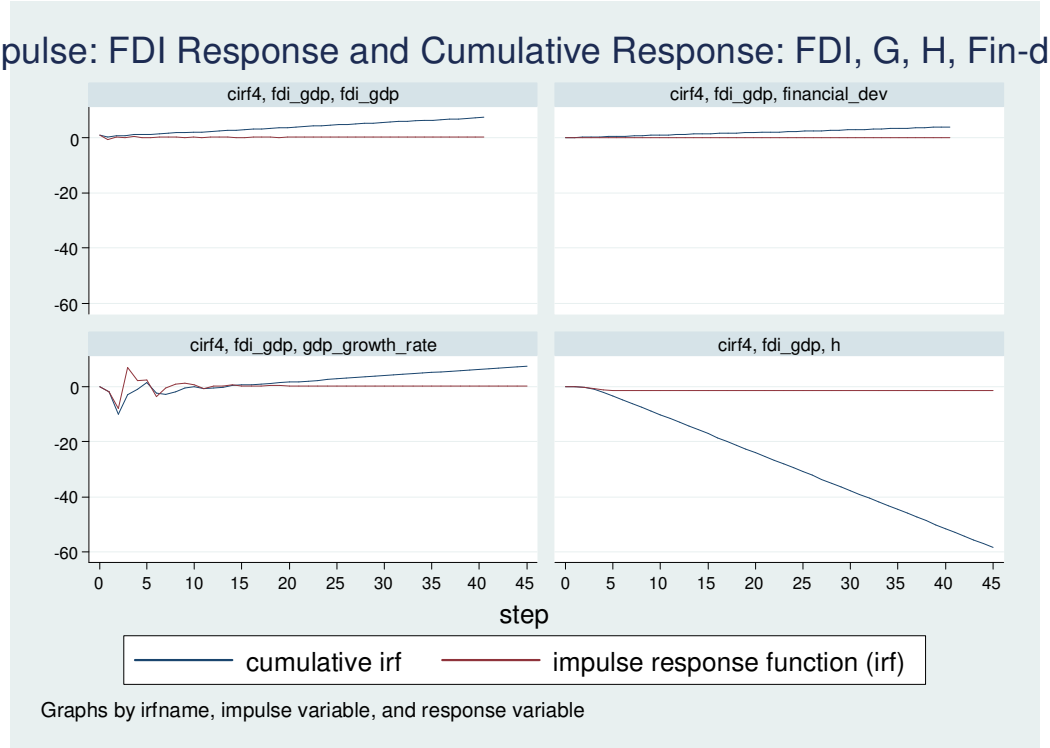


Fig. 2: Cumulative Impulse Response Function for model 1



In order to closely observe the impact of FDI on economic growth in the long-run, the following shorter simplified equation is tested:

After selecting the optimal lag and rank order, we obtain cointegration equations. The cointegration equation generated by the model is given as follows:

ln GDP = 0.85 FDI - 0.516 H + 19.49 dom-inv

FDI = 1.17 lnGDP - 0.60 H + 22.90 Dom-inv

The equations show that the domestic investment has a strong positive impact both on the GDP as well as on the foreign investments. There is found a bi-dimensional relationship between GDP and FDI, while the effect on human capital is negative.

The Cumulative Impulse Response Function graphs are shown below. They show that a positive shock to the domestic production produces a strongly beneficial impact on human capital, and so does the shock to FDI. A shock to FDI has a slightly positive effect on the national GDP, while the GDP's effect on FDI is somewhat negative. Shocks to both the GDP and FDI fail to have any significant impact on the domestic investment.

Fig. 3. Cumulative Impulse Response Function for model 2, impulse: GDP_growth_rate

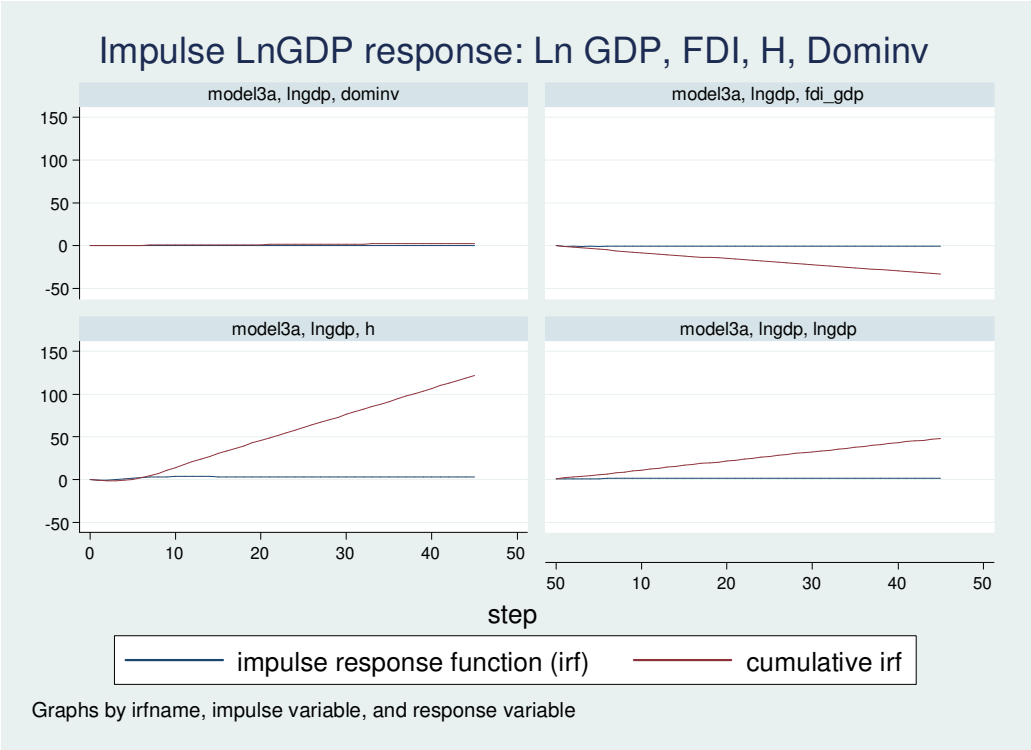
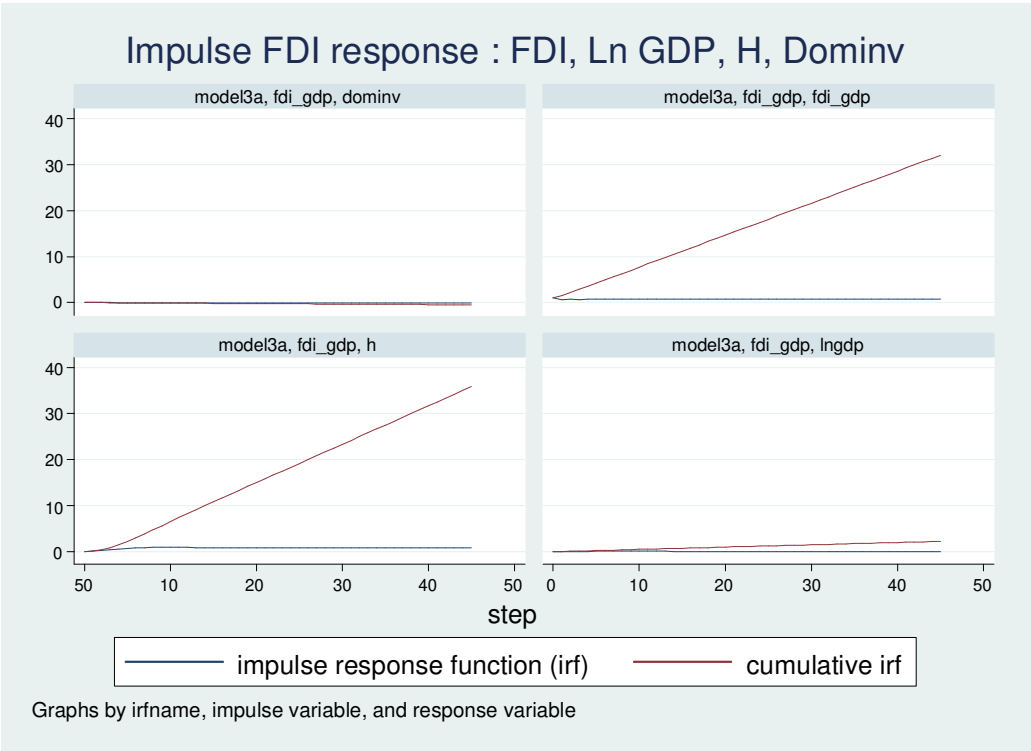


Fig. 4. Cumulative Impulse Response Function for model 2, impulse: FDI



As our time series is relatively short with observations for only 45 years, we will not use stability tests (such as the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ) test).

4. Discussion

4.1. Interpretation of empirical results

Foreign investments in Pakistan, according to our econometric results, have a two-way relationship with the GDP in the long run. However, this impact is much smaller than that of domestic investments both over the national economy as well as the FDIs. Domestic capital remains king[1]. This outcome is quite understandable given the conditions of the Pakistani economy. FDI has remained a negligible factor in the economy for over half the period examined. Foreign direct investment inflows took up only in the 1990s, when the international trade and investment promoting policies were launched and the privatization programme began. Besides, these FDI inflows, being concentrated in a few sectors, have not had an across-the-board effect on the national economy. However, the large size of the economy is quite an attraction for foreign investors, so much so that they often disregard the unstable geopolitical situation in the region. Similarly, foreign investment adds to the country's production in the long run, even though in limited areas. This result is similar to the one found by Yasmin (2005). The disparity between a small positive long-run effect of FDI on growth and a strong positive short-run effect on the GDP may support the view that short-run fluctuations in the investment environment, and hence FDI, are associated with large, though temporary, booms and busts in economic performance (also see Herzer et al., 2006).

The smallish impact of FDIs on the Pakistani GDP can be explained through their sectoral decomposition. These investments, in the short run, have increased the growth rate as well as the country's international trade. This sheds light on the fact that entrance of international banks (often through M&As) has coincided with rapid rise of consumer financing-led imports, particularly those of automobiles, mobile telephones and other electronic consumer items. Pakistan, with less than one million mobile phone subscribers in 2000, has now as many as 60 million cell-phone users. All the mobile telecommunication companies are now partly or fully foreign-owned, while the Japanese car-makers in Pakistan have doubled their car production in the last five years. Import of petroleum has risen and the inflating oil import bill has added to the balance of payment deficit. This consumption-based growth should cause inflation in the short term, precisely what shown by our study. Likewise, a considerably slow pace of export growth in the short run compared to imports means that FDI has not improved by much the exportable surplus of the country.

Green-field investments, particularly in the 90s, have often come in the power sector. Substantial addition in furnace oil-based electricity generation by the independent power producers (IPPs), even though at highest rates in the region, ameliorated the hitherto chronic power shortage in the country, and has thus played a constructive

[1] The share of domestic investment in the GDP hovers around 20 percent compared to under 3 percent for FDI

role in the GDP growth, at least in the short-run. A negative association between FDI and domestic investment may infer limited investment opportunities for which foreign and domestic investers are in competition. FDI, in this case, may well be replacing domestic investment.

The long-run negative relationship with human capital is indicative of the non-existence of any substantial technology spillovers arising from these foreign investments. The skill level of the Pakistani workforce has not kept pace with the growth of FDIs rich in technological content. During 1992-2006, the period of investment policy reforms and concomitant rise in FDI inflows, the overall labour productivity grew at a modest rate of 1.7 per cent. Furthermore, foreign investments in Pakistan, especially those in the recent years, have been mostly in the high-skill capital-intensive services sector like oil and gas exploration, financial services and telecoms which do not create many jobs. The skill level of mainly unskilled and semi-skilled labour employed in major labour-intensive sectors like agriculture, commerce, transportation etc has not changed much. As a result, the economy reflects an increasing modern vs traditional sector dichotomy.

The relationship between FDI and financial sector development appears to be negative, albeit slightly so. This result points to the relative lack of sophistication of Pakistan's financial sector. This is analagous to the inference drawn by Khan (2007) who suggests a minimum threshold of financial development before Pakistan could benefit from the FDI inflows.

In the equations, FDI shows no significant influence over its evolution. We can therefore not say with certainty if foreign investment in Pakistan has an agglomeration effect. With foreign investers queueing up to invest in China and other East and South-East Asian countries, the limited FDI inflows coming to Pakistan do not seem to have created a bandwagon effect.

4.2. Other socioeconomic factors

Some economists maintain that by increasing the rewards for good policies and the penalties for bad policies, the free flow of capital across borders promotes more disciplined macroeconomic policies and reduces the frequency of policy errors. It needs to be seen if this has been the case for Pakistan. Have the FDI inflows compelled the government to improve the transparency of administrative processes and made doing the business easier? More importantly, have they been a help to the people as a whole?

The answer to the first question is a qualified yes. The government has reformed its business and industry related procedures, simplified rules and regulations, and reduced bureaucratic hurdles. Pakistan, as a result, is a more business-friendly place than several other countries in the region, even if lots still remain to be done.

In contrast, the consequences for the common man have been less salutary. Foreign investers have often concentrated on juicy, immediately profitable sectors while long-run investments in the sectors with greatest potential for the country have often got little attention. For instance, these days the country is facing electricity shortage due to insufficient generation capacity (urban areas are facing upto eight hours of daily power-cuts, while the situation in the rural areas is worse). The government is encountering difficulties in getting foreign investment for its inexpensive and abundant hydro and coal power potential, while propositions for costly but quickly installable oil-based power-plants come by easily. Likewise, banks have attracted lots of FDI inflows,

particularly since early 2000s when thanks to growing consumer-loan boom, the bank spreads went above seven percent, while large parts of the economy, such as the textiles, agriculture, transportation etc remain short of investment. These foreign investments have certainly had their positive effects on the economy, but not many have possibly benefited from them. Not much employment has been generated, nor has the standard of living of an ordinary man improved. The people who are hit the most by the inflationary bouts rising from the consumption binge are the poorest of the poor. In a country where upto a third of the population lives below the nominal poverty line of a dollar a day, such non-job-creating, capital-intensive investments have widened the gulf between the haves and the havenots further. There have also been some bad examples of foreign investment, with investers repatriating profits approaching the total equity invested within the first year. This has resulted in allegations of casino capitalism leading to immiserizing growth.

Another problem that has started raising its head, and which is bound to get bigger with time, is that of profit outflows, also known as reverse remittances. In 1999, foreign-owned companies repatriated $97 million of profits. This figure has now reached $1 billion and is bound to increase. This could have deleterious effects on the balance of payment of the country already countering its worst trade and budget deficit. The exchange rate may also come under greater pressure, eroding the competitiveness of Pakistan's export-oriented industry.

4.3. Policy implications

In the words of Gruben and McLeod (1998): "If a country wants to impose capital controls, the last type of capital it ought to want to control is FDI." A long-run positive relationship between FDI and the national economy suggests that government should continue its investment-friendly policies, and remove the bottlenecks hampering greater flows of FDI. Similarly, developing the financial sector may help channel the FDI better in the economy. For this purpose, banking and financial regulations need to be streamlined, the State bank made fully autonomous, and the introduction of more sophisticated financial instruments facilitated.

Having said that, the government should not ignore the domestic investment. For a capital-short country, there should not be any trade-off between the two types of investment. An increase in the national savings rate and a corresponding rise in domestic investment will prove equally if not more advantageous. Domestic investments can not only increase the country's exportable surplus, but also absorb the ever-increasing stock of labour, something highly appreciable for a labour-abundant country.

5. Conclusion

In this study, we sought to know what kind of effect foreign investment has had on the Pakistani economy. We determine that FDI does have a positive effect on the economy, particularly in the short-term. FDI is also found to be inflationary. We estimate that the role of foreign investment in the economy is less important than that of domestic investment. We find little evidence of knowledge-transfers through skill development of Pakistani

workforce. We can thus say that FDIs neither been an absolute boon, nor a downright bane for Pakistan. They have instead, just like much else in our lives, been a mixed bag.

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7. Appendix

7.1. Table .1 Stationarity tests:

Variables	**DF**	ADF1	ADF2	**pp**	H0	Stationarity
FDI	**-4,30*** **	-2,72	-2,34	**-4,39*** **	**rejected**	**st**
GDP growth rate	**-5,38*** **	-4,20***	-3,45**	**-5,62*** **	**rejected**	**st**
H	**-0.886**	-1.263	-1.178	**-0,92**	**accepted**	**nst**
FDI*H	**-3,16**	-2,45	-2,17	**-3,09**	**accepted**	**nst**
ln y(t-1)	**-2,55**	**-2,31**	-2,26	**-2,55**	**accepted**	**nst**
Govt_exp	**-1,50***	-1,75**	-1,46	**-1,58**	**rejected**	**st**
Trade_open	**-1,45**	-2,67	-2,36	**-2,04**	**accepted**	**nst**
Fin_dev	**-3,48****	-3,70**	-3,87**	**-3,48****	**rejected**	st
Dom_inv	**-2,39****	-3,16***	-2,12**	**-2,58**	**rejected**	**st**
CPI	**-2,977****	-3,30**	-2,65*	**-3,04****	**rejected**	**st**
D_H	**-2,58**	**-2,74***	2,99**	**-2,77****	**rejected**	**st**
D_FDI*H	**-8,48*** **	**-5,70*** **	-4,83***	**-8,48*** **	**rejected**	**st**
D_lny	**-5,52*** **	**-3,34****	-2,41	**-5,55*** **	**rejected**	**st**
D_trade	**-4,07*** **	**-3,89*** **	-2,89*	**-4,07*** **	**rejected**	**st**
Residue1	**-7.382*** **	-5.773***	-5.194***	**-7.69*** **	**rejected**	**ST**
Residue 2	**-8.647*** **	-6.539***	-7.484***	**-10.506*** **	**rejected**	**ST**

(The ADF test is based on the Mackinnon (1991) critical values,

***, ** and * indicate significance at one, five and ten percent respectively.)

7.2. Model 1: Selection order criteria

Sample: 1966 2005 Number of obs = 40

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-36.5879				.05336	2.7294	3.00419	3.48939
1	-30.6897	11.797	4	0.019	.049183	2.63448	2.97034	3.56337
2	-18.5406	24.298	4	0.000	.033379*	2.22703*	2.62395*	3.3248*
3	-16.5617	3.9579	4	0.412	.037978	2.32808	2.78607	3.59474
4	-11.6719	9.7796*	4	0.044	.03774	2.28359	2.80264	3.71914
5	-7.75688	7.83	4	0.098	.03988	2.28784	2.86796	3.89228

Endogenous: gdp_growth_rate fdi_gdp

Exogenous: h lnyt fdi_h_gdp financial_dev trade_open dominv govt_exp_gdp cpi _cons

Sample: 1966 2005 Number of obs = 40

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-66.0257				.01839	4.50129	4.86767	5.51461
1	-23.3682	85.315	9	0.000	.003512	2.81841	3.32219	4.21174
2	3.14838	53.033*	9	0.000	.001536*	1.94258*	2.58376*	3.7159*
3	7.98469	9.6726	9	0.378	.002049	2.15077	2.92934	4.30409
4	15.2101	14.451	9	0.107	.002533	2.23949	3.15546	4.77281
5	21.6439	12.868	9	0.169	.003461	2.36781	3.42117	5.28112

Endogenous: gdp_growth_rate fdi_gdp h

Exogenous: lnyt fdi_h_gdp financial_dev trade_open dominv govt_exp_gdp cpi _cons

7.3. Model 1: Johansen tests for cointegration

Trend: constant Number of obs = 43

Sample: 1963 2005 Lags = 2

---

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	110	203.64304	.	370.2694	233.13
1	129	255.38257	0.90987	266.7903	192.89
2	146	290.64432	0.80604	196.2668	156.00
3	161	319.54888	0.73930	138.4577	124.24
4	174	342.18211	0.65101	93.1912*	94.15
5	185	361.85723	0.59953	53.8410	68.52
6	194	371.77718	0.36960	34.0011	47.21
7	201	380.431	0.33136	16.6935	29.68
8	206	385.88853	0.22418	5.7784	15.41
9	209	388.34988	0.10817	0.8557	3.76
10	210	388.77773	0.01970		

7.4. Model 1: Vector error-correction model

```
Vector error-correction model
Sample:    1963     2005                        No. of obs      =        43
                                                AIC             = -7.822424
Log likelihood =  342.1821                      HQIC            = -5.194311
Det(Sigma_ml)  =  5.80e-20                      SBIC            =  -.695707
Equation           Parms      RMSE     R-sq      chi2     P>chi2
------------------------------------------------------------------
D_gdp_growth_r~e      15     1.80079   0.7254   68.69407   0.0000
D_fdi_gdp             15     .284024   0.4962   25.60637   0.0424
D_lnyt                15      .00949   0.9821    1427.14   0.0000
D_h                   15     .225412   0.7276    69.4363   0.0000
```

```
D_fdi_h_gdp          15     1.99785   0.2946   10.85659   0.7627
D_financial_dev      15     .020341   0.4043   17.64251   0.2819
D_trade_open         15     1.85273   0.5806   36.00053   0.0018
D_dominv             15     .008669   0.6693   52.62968   0.0000
D_govt_exp_gdp       15     .009264   0.4877    24.7492   0.0534
D_cpi                15     3.87384   0.5895   37.34143   0.0011
------------------------------------------------------------------
------------------------------------------------------------------------------
             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
D_gdp_grow~e |
        _ce1 |
         L1. |  -1.148861   .3729843    -3.08   0.002    -1.879896   -.4178248
        _ce2 |
         L1. |  -12.58491   6.016303    -2.09   0.036    -24.37665   -.7931749
        _ce3 |
         L1. |  -3.286054   1.889998    -1.74   0.082    -6.990382    ..4182744
        _ce4 |
         L1. |  -.2206247   .2039497    -1.08   0.279    -.6203589    ..1791094
gdp_growth~e |
         LD. |   .2507406   .2861262     0.88   0.381    -.3100564    ..8115375
     fdi_gdp |
         LD. |   10.64141   3.928368     2.71   0.007     2.941952    18.34087
        lnyt |
         LD. |   39.73624   27.13774     1.46   0.143    -13.45276    92.92524
           h |
         LD. |  -.3166723   1.326474    -0.24   0.811    -2.916514     2.28317
   fdi_h_gdp |
         LD. |  -1.016082   .5194749    -1.96   0.050    -2.034234    ..0020703
financial_~v |
         LD. |  -22.08203    19.5965    -1.13   0.260    -60.49048    16.32641
  trade_open |
         LD. |   .0340665   .1717406     0.20   0.843     -.302539     ..370672
      dominv |
         LD. |  -8.133704   35.44307    -0.23   0.818    -77.60084    61.33343
govt_exp_gdp |
         LD. |  -15.75536   33.86599    -0.47   0.642    -82.13148    50.62076
```

```
         cpi |
          LD. |   .0480226   .0885629     0.54   0.588    -.1255576    ..2216027
       _cons |  -.0016214   1.023718    -0.00   0.999    -2.008072    2.004829

-------------+----------------------------------------------------------------
D_fdi_gdp    |
        _ce1 |
          L1. |   .0245586   .0588277     0.42   0.676    -.0907416    ..1398588
        _ce2 |
          L1. |  -2.186249   .9489018    -2.30   0.021    -4.046062   -.3264358
        _ce3 |
          L1. |  -.0493944   .2980938    -0.17   0.868    -.6336475    ..5348587
        _ce4 |
          L1. |   .0025706   .0321673     0.08   0.936    -.0604762    ..0656174
gdp_growth~e |
          LD. |   .0125642   .0451283     0.28   0.781    -.0758857    ..1010141
     fdi_gdp |
          LD. |   .4682352   .6195891     0.76   0.450    -.7461371    1.682608
        lnyt |
          LD. |   1.670826   4.280212     0.39   0.696    -6.718236    10.05989
           h |
          LD. |   .2823449   .2092139     1.35   0.177    -.1277067    ..6923966
   fdi_h_gdp |
          LD. |  -.0785454   .0819325    -0.96   0.338    -.2391301    ..0820393
financial_~v |
          LD. |  -3.769266   3.090795    -1.22   0.223    -9.827112     2.28858
  trade_open |
          LD. |  -.0247103   .0270872    -0.91   0.362    -.0778003    ..0283797
      dominv |
          LD. |   -2.04273   5.590143    -0.37   0.715    -12.99921    8.913748
govt_exp_gdp |
          LD. |  -3.194219   5.341403    -0.60   0.550    -13.66318    7.274739
         cpi |
          LD. |  -.0018376   .0139683    -0.13   0.895     -.029215    ..0255398
       _cons |  -.0979107   .1614626    -0.61   0.544    -.4143715    ..2185502

-------------+----------------------------------------------------------------
```

```
D_lnyt          |
        _ce1    |
         L1.    |   .0078396   .0019655     3.99   0.000     .0039873     ..011692
        _ce2    |
         L1.    |    .057367    .031704     1.81   0.070    -.0047716    ..1195057
        _ce3    |
         L1.    |  -.0398936   .0099597    -4.01   0.000    -.0594142    -.020373
        _ce4    |
         L1.    |   .0066804   .0010747     6.22   0.000     .0045739    ..0087868
gdp_growth~e    |
         LD.    |  -.0000688   .0015078    -0.05   0.964     -.003024    ..0028865
     fdi_gdp    |
         LD.    |  -.0279299   .0207012    -1.35   0.177    -.0685036    ..0126437
        lnyt    |
         LD.    |  -.2884321   .1430071    -2.02   0.044    -.5687208   -.0081433
           h    |
         LD.    |  -.0005574   .0069901    -0.08   0.936    -.0142578    ..0131429
   fdi_h_gdp    |
         LD.    |   .0053311   .0027375     1.95   0.051    -.0000342    ..0106965
financial_~v    |
         LD.    |  -.1218489   .1032672    -1.18   0.238    -.3242488    ..0805511
  trade_open    |
         LD.    |   -.000989    .000905    -1.09   0.274    -.0027628    ..0007848
      dominv    |
         LD.    |   .2894422   .1867734     1.55   0.121    -.0766269    ..6555114
govt_exp_gdp    |
         LD.    |   .4754687   .1784627     2.66   0.008     .1256882    ..8252493
         cpi    |
         LD.    |   .0001732   .0004667     0.37   0.711    -.0007415    ..0010879
       _cons    |   .0404118   .0053947     7.49   0.000     .0298384    ..0509851

-------------+----------------------------------------------------------------
D_h             |
        _ce1    |
         L1.    |   .0311314    .046688     0.67   0.505    -.0603753    ..1226382
        _ce2    |
         L1.    |  -.0305742   .7530855    -0.04   0.968    -1.506595    1.445446
```

```
        _ce3 |
         L1. |   .4230689   .2365789     1.79   0.074    -.0406172     ..886755
        _ce4 |
         L1. |  -.0228324   .0255292    -0.89   0.371    -.0728688     ..027204
gdp_growth~e |
         LD. |   .0015688   .0358156     0.04   0.965    -.0686285     ..071766
     fdi_gdp |
         LD. |   .0587044   .4917301     0.12   0.905    -.9050689    1.022478
        lnyt |
         LD. |   1.589654   3.396943     0.47   0.640    -5.068233    8.247541
           h |
         LD. |   .7982454   .1660403     4.81   0.000     .4728124    1.123678
   fdi_h_gdp |
         LD. |  -.0012292   .0650248    -0.02   0.985    -.1286755    ..1262171
financial_~v |
         LD. |   3.122344   2.452975     1.27   0.203    -1.685399    7.930087
  trade_open |
         LD. |  -.0032064   .0214975    -0.15   0.881    -.0453407    ..0389279
      dominv |
         LD. |  -1.914046   4.436555    -0.43   0.666    -10.60954    6.781442
govt_exp_gdp |
         LD. |   7.266262   4.239146     1.71   0.087    -1.042312    15.57484
         cpi |
         LD. |  -.0018784   .0110858    -0.17   0.865    -.0236061    ..0198494
       _cons |   -.030843    .128143    -0.24   0.810    -.2819987    ..2203127

-------------+----------------------------------------------------------------
D_fdi_h_gdp  |
        _ce1 |
         L1. |   .1273913   .4138001     0.31   0.758    -.6836419    ..9384246
        _ce2 |
         L1. |  -6.438837   6.674669    -0.96   0.335    -19.52095    6.643274
        _ce3 |
         L1. |  -.1538025   2.096821    -0.07   0.942    -4.263497    3.955892
        _ce4 |
         L1. |   .1347246    .226268     0.60   0.552    -.3087526    ..5782018
gdp_growth~e |
```

```
         LD. |   .0165776    .317437     0.05   0.958    -.6055875    ..6387428
     fdi_gdp |
         LD. |   2.563438   4.358251     0.59   0.556    -5.978577    11.10545
        lnyt |
         LD. |  -8.177544   30.10744    -0.27   0.786    -67.18703    50.83195
           h |
         LD. |   1.843774   1.471631     1.25   0.210     -1.04057    4.728117
   fdi_h_gdp |
         LD. |  -.5870273   .5763212    -1.02   0.308    -1.716596    ..5425415
financial_~v |
         LD. |   -16.5844   21.74096    -0.76   0.446    -59.19589    26.02709
  trade_open |
         LD. |  -.1098736   .1905343    -0.58   0.564    -.4833139    ..2635667
      dominv |
         LD. |  -24.24177   39.32162    -0.62   0.538    -101.3107    52.82718
govt_exp_gdp |
         LD. |   -13.7817   37.57196    -0.37   0.714    -87.42139    59.85798
         cpi |
         LD. |   .0166647   .0982544     0.17   0.865    -.1759104    ..2092397
       _cons |    .015519   1.135744     0.01   0.989    -2.210498    2.241536

-------------+----------------------------------------------------------------
D_financia~v |
        _ce1 |
         L1. |  -.0037081   .0042131    -0.88   0.379    -.0119656    ..0045494
        _ce2 |
         L1. |   .1719866   .0679576     2.53   0.011     .0387921     ..305181
        _ce3 |
         L1. |  -.0069475   .0213486    -0.33   0.745      -.04879     ..034895
        _ce4 |
         L1. |   .0023484   .0023037     1.02   0.308    -.0021669    ..0068636
gdp_growth~e |
         LD. |   .0021548    .003232     0.67   0.505    -.0041797    ..0084893
     fdi_gdp |
         LD. |  -.1012339   .0443732    -2.28   0.023    -.1882037   -.0142641
        lnyt |
         LD. |   .1968733   .3065364     0.64   0.521     -.403927    ..7976736
```

h						
LD.	-.0405459	.0149833	-2.71	0.007	-.0699126	-.0111792
fdi_h_gdp						
LD.	.0133492	.0058678	2.28	0.023	.0018486	..0248498
financial_~v						
LD.	.0721774	.2213538	0.33	0.744	-.361668	..5060228
trade_open						
LD.	-.0001139	.0019399	-0.06	0.953	-.003916	..0036883
dominv						
LD.	.5329542	.4003498	1.33	0.183	-.251717	1.317625
govt_exp_gdp						
LD.	.3256702	.3825358	0.85	0.395	-.4240863	1.075427
cpi						
LD.	-.000393	.0010004	-0.39	0.694	-.0023536	..0015677
_cons	-.0046418	.0115635	-0.40	0.688	-.0273059	..0180222
D_trade_open						
_ce1						
L1.	-.0667793	.3837415	-0.17	0.862	-.8188988	..6853402
_ce2						
L1.	-16.37644	6.189819	-2.65	0.008	-28.50826	-4.244619
_ce3						
L1.	3.500596	1.944508	1.80	0.072	-.3105685	7.311761
_ce4						
L1.	-.5046839	.2098319	-2.41	0.016	-.9159468	-.093421
gdp_growth~e						
LD.	.3461286	.2943783	1.18	0.240	-.2308423	..9230994
fdi_gdp						
LD.	7.909827	4.041666	1.96	0.050	-.0116936	15.83135
lnyt						
LD.	26.48057	27.92042	0.95	0.343	-28.24245	81.20359
h						
LD.	3.191612	1.364731	2.34	0.019	.5167884	5.866437
fdi_h_gdp						
LD.	-.9250757	.534457	-1.73	0.083	-1.972592	..1224409
financial_~v						

```
         LD. |   19.25398   20.16169     0.95   0.340    -20.26219    58.77016
  trade_open |
         LD. |   .4638494   .1766938     2.63   0.009     .1175359    ..8101629
      dominv |
         LD. |  -50.88692   36.46528    -1.40   0.163    -122.3576    20.58372
govt_exp_gdp |
         LD. |  -33.45983   34.84272    -0.96   0.337    -101.7503    34.83064
         cpi |
         LD. |  -.0764019   .0911172    -0.84   0.402    -.2549883    ..1021845
       _cons |   .0058263   1.053243     0.01   0.996    -2.058492    2.070145

-------------+----------------------------------------------------------------
D_dominv     |
        _ce1 |
         L1. |   .0049597   .0017956     2.76   0.006     .0014404     ..008479
        _ce2 |
         L1. |  -.0099996   .0289633    -0.35   0.730    -.0667665    ..0467674
        _ce3 |
         L1. |   .0218947   .0090987     2.41   0.016     .0040615    ..0397278
        _ce4 |
         L1. |  -.0026096   .0009818    -2.66   0.008    -.0045339   -.0006852
gdp_growth~e |
         LD. |  -.0023773   .0013774    -1.73   0.084    -.0050771    ..0003224
     fdi_gdp |
         LD. |  -.0049027   .0189117    -0.26   0.795    -.0419689    ..0321635
        lnyt |
         LD. |     -.0974   .1306446    -0.75   0.456    -.3534587    ..1586587
           h |
         LD. |  -.0001255   .0063858    -0.02   0.984    -.0126415    ..0123905
   fdi_h_gdp |
         LD. |   .0019773   .0025008     0.79   0.429    -.0029242    ..0068788
financial_~v |
         LD. |   .0739992   .0943401     0.78   0.433     -.110904    ..2589024
  trade_open |
         LD. |   .0013067   .0008268     1.58   0.114    -.0003138    ..0029271
      dominv |
         LD. |   .1801396   .1706275     1.06   0.291    -.1542841    ..5145634
```

```
govt_exp_gdp |
         LD. |   -.136387   .1630353    -0.84   0.403    -.4559302    ..1831562
         cpi |
         LD. |  -.0008575   .0004264    -2.01   0.044    -.0016931   -.0000218
       _cons |   .0075925   .0049283     1.54   0.123    -.0020668    ..0172518

-------------+----------------------------------------------------------------
D_govt_exp~p |
        _ce1 |
         L1. |   .0034098   .0019189     1.78   0.076    -.0003511    ..0071707
        _ce2 |
         L1. |  -.0518212   .0309515    -1.67   0.094     -.112485    ..0088427
        _ce3 |
         L1. |   .0034228   .0097233     0.35   0.725    -.0156345    ..0224801
        _ce4 |
         L1. |   .0009767   .0010492     0.93   0.352    -.0010798    ..0030331
gdp_growth~e |
         LD. |  -.0017645    .001472    -1.20   0.231    -.0046496    ..0011206
     fdi_gdp |
         LD. |  -.0029337   .0202099    -0.15   0.885    -.0425444     ..036677
        lnyt |
         LD. |  -.0309108    .139613    -0.22   0.825    -.3045473    ..2427257
           h |
         LD. |   .0081758   .0068242     1.20   0.231    -.0051994     ..021551
   fdi_h_gdp |
         LD. |   .0022201   .0026725     0.83   0.406    -.0030179    ..0074581
financial_~v |
         LD. |   .0179821   .1008163     0.18   0.858    -.1796142    ..2155784
  trade_open |
         LD. |   -.000806   .0008835    -0.91   0.362    -.0025377    ..0009257
      dominv |
         LD. |  -.0061925   .1823407    -0.03   0.973    -.3635736    ..3511886
govt_exp_gdp |
         LD. |   .3459108   .1742272     1.99   0.047     .0044317    ..6873898
         cpi |
         LD. |   .0005952   .0004556     1.31   0.191    -.0002978    ..0014882
       _cons |  -.0063251   .0052666    -1.20   0.230    -.0166475    ..0039973
```

D_cpi						
_ce1						
L1.	-.3739447	.8023591	-0.47	0.641	-1.94654	1.19865
_ce2						
L1.	-35.85973	12.94219	-2.77	0.006	-61.22597	-10.4935
_ce3						
L1.	-11.73766	4.06574	-2.89	0.004	-19.70636	-3.768956
_ce4						
L1.	-.165905	.4387341	-0.38	0.705	-1.025808	..6939981
gdp_growth~e						
LD.	.614	.615511	1.00	0.318	-.5923793	1.820379
fdi_gdp						
LD.	19.48849	8.450656	2.31	0.021	2.925504	36.05147
lnyt						
LD.	31.61446	58.37837	0.54	0.588	-82.80505	146.034
h						
LD.	1.596493	2.853495	0.56	0.576	-3.996254	7.18924
fdi_h_gdp						
LD.	-2.417339	1.117488	-2.16	0.031	-4.607575	-.2271029
financial_~v						
LD.	-62.45155	42.15575	-1.48	0.138	-145.0753	20.17221
trade_open						
LD.	-.0747158	.3694463	-0.20	0.840	-.7988172	..6493857
dominv						
LD.	35.74224	76.24468	0.47	0.639	-113.6946	185.1791
govt_exp_gdp						
LD.	-147.3617	72.85209	-2.02	0.043	-290.1492	-4.574239
cpi						
LD.	-.0261311	.1905154	-0.14	0.891	-.3995345	..3472723
_cons	.001168	2.202209	0.00	1.000	-4.315083	4.317419

7.5. Model 1: Cointegrating equations

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	6	40.20004	0.0000
_ce2	6	2408.688	0.0000
_ce3	6	346.7142	0.0000
_ce4	6	113.1539	0.0000

Identification: beta is exactly identified

Johansen normalization restrictions imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1						
gdp_growth~e	1	.	.	.	.	.
fdi_gdp	-6.66e-16	.	.	.	.	.
lnyt	-1.17e-15	.	.	.	.	.
h	(dropped)					
fdi_h_gdp	-.0394878	.0562523	-0.70	0.483	-.1497403	..0707647
financial_~v	-20.45237	4.590625	-4.46	0.000	-29.44983	-11.45491
trade_open	.1209421	.0364695	3.32	0.001	.0494631	..1924211
dominv	-65.81151	11.28316	-5.83	0.000	-87.9261	-43.69693
govt_exp_gdp	25.8538	8.700098	2.97	0.003	8.80192	42.90568
cpi	-.0125933	.0276029	-0.46	0.648	-.0666941	..0415074
_cons	5.818501	.	.	.	.	.
_ce2						
gdp_growth~e	6.94e-18	.	.	.	.	.
fdi_gdp	1	.	.	.	.	.
lnyt	-4.16e-17	.	.	.	.	.

```
         h |  (dropped)
  fdi_h_gdp |  -.1202968   .0033255   -36.17   0.000    -.1268146    -.113779
financial_~v |  -2.461576   .2713841    -9.07   0.000    -2.993479   -1.929673
 trade_open |   .0155816    .002156     7.23   0.000     .011356    ..0198073
    dominv |  -4.219343   .6670267    -6.33   0.000    -5.526692   -2.911995
govt_exp_gdp |   3.875763   .5143238     7.54   0.000     2.867707    4.883819
       cpi |  -.0022361   .0016318    -1.37   0.171    -.0054344    ..0009621
     _cons |    .442581          .       .       .           .           .
-------------+----------------------------------------------------------------
_ce3          |
gdp_growth~e |   6.94e-18          .       .       .           .           .
    fdi_gdp |  -5.55e-17          .       .       .           .           .
      lnyt |          1          .       .       .           .           .
         h |   3.47e-18          .       .       .           .           .
  fdi_h_gdp |  -.0308618   .0160554    -1.92   0.055    -.0623297    ..0006062
financial_~v |   .0931133   1.310243     0.07   0.943    -2.474915    2.661141
 trade_open |  -.0890063    .010409    -8.55   0.000    -.1094076    -.068605
    dominv |   20.00329   3.220405     6.21   0.000     13.69141    26.31517
govt_exp_gdp |  -13.79618   2.483156    -5.56   0.000    -18.66308   -8.929288
       cpi |   .0495888   .0078783     6.29   0.000     .0341475      ..06503
     _cons |   -10.4736          .       .       .           .           .
-------------+----------------------------------------------------------------
_ce4          |
gdp_growth~e |   2.22e-16          .       .       .           .           .           .
    fdi_gdp |  (dropped)
      lnyt |   1.78e-15          .       .       .           .           .           .
         h |          1          .       .       .           .           .
  fdi_h_gdp |  -.3620209   .1753421    -2.06   0.039    -.7056852   -.0183567
financial_~v |   56.71288   14.30928     3.96   0.000     28.66721    84.75855
 trade_open |  -.4776232   .1136779    -4.20   0.000    -.7004279   -.2548186
    dominv |   265.8865   35.17034     7.56   0.000     196.9539    334.8191
```

```
govt_exp_gdp |  -184.888   27.11877    -6.82   0.000    -238.0398   -131.7362
         cpi |   .247613   .0860401     2.88   0.004     .0789775    ..4162486
       _cons |  -28.51275          .        .       .           .           .
------------------------------------------------------------------------------
```

7.6. Model 2: Selection order criteria

```
  Sample:    1965     2005                    Number of obs      =        41
+---------------------------------------------------------------------------+
|lag |    LL      LR      df    p      FPE       AIC      HQIC      SBIC    |
|----+----------------------------------------------------------------------|
|  0 |  20.6737                        5.2e-06  -.813349  -.752472  -.646171  |
|  1 |  223.532  405.72   16  0.000  5.8e-10   -9.9284  -9.62401  -9.09251  |
|  2 |  257.305  67.545*  16  0.000  2.5e-10* -10.7954* -10.2475* -9.29076* |
|  3 |  270.451  26.291   16  0.050  3.0e-10  -10.6561  -9.86473  -8.48281  |
|  4 |  277.225  13.548   16  0.632  5.4e-10  -10.2061  -9.17117  -7.36406  |
+---------------------------------------------------------------------------+
 Endogenous:  lngdp fdi_gdp h dominv
  Exogenous:  _cons
```

7.7. Model 2: Johansen tests for cointegration

```
                    Johansen tests for cointegration
Trend: constant                                      Number of obs =      43
Sample:     1963     2005                                      Lags =       2
------------------------------------------------------------------------------
                                                          5%
maximum                                    trace      critical
  rank     parms       LL       eigenvalue statistic    value
    0       20      238.95206          .     54.1705    47.21
    1       27      252.52653     0.46814    27.0216*   29.68
    2       32      258.30918     0.23583    15.4563    15.41
    3       35      263.34928     0.20897     5.3761     3.76
    4       36      266.03732     0.11753
------------------------------------------------------------------------------
```

7.8. Model 2: Cointegrating equations

```
Cointegrating equations

Equation           Parms    chi2     P>chi2
-------------------------------------------
_ce1                   3   130.7614   0.0000
-------------------------------------------
```

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1						
lngdp	1	.	.	.	.	.
fdi_gdp	.8513734	.4332473	1.97	0.049	.0022243	1.700522
h	-.5161294	.0646503	-7.98	0.000	-.6428417	-.3894171
dominv	19.49816	5.453004	3.58	0.000	8.810471	30.18585
_cons	-10.73163	.	.	.	.	.

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_ce1						
fdi_gdp	1	.	.	.	.	.
lngdp	1.174573	.5027575	2.34	0.019	.1891862	2.159959
h	-.6062315	.1302169	-4.66	0.000	-.861452	-.3510111
dominv	22.90201	6.3702	3.60	0.000	10.41665	35.38737
_cons	-12.60507	.	.	.	.	.